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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/442,853	11/18/1999	ROGER A. BABB	53290-P014US	6475

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EXAMINER
ODOM, CURTIS B

ART UNIT	PAPER NUMBER
2634	4

DATE MAILED: 06/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/442,853	BABB ET AL.	
	Examiner	Art Unit	
	Curtis B. Odom	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 November 1999* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *7-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *22-27 and 33-37* is/are allowed.

6)☒ Claim(s) *7-14,16-18,21 and 28-31* is/are rejected.

7)☒ Claim(s) *15,19,20 and 32* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 November 1999* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because it contains more than 150 words. Correction is required. See MPEP § 608.01(b).

Claim Objections

2. Claims 8 and 9 are objected to because of the following informalities: The word "system" is suggested to be changed to "terminal". Appropriate correction is required.

3. Claim 10 is objected to because of the following informalities: The word "said" is suggested to be changed to "the". Appropriate correction is required.

4. Claims 12 and 17-19 are objected to because of the following informalities: The phrase "said discrete steps" is suggested to be changed to "the discrete steps". Appropriate correction is required.

5. Claims 24 and 29 are objected to because of the following informalities: The phrase "said frequency" is suggested to be changed to "the frequency". Appropriate correction is required.

6. Claim 37 is objected to because of the following informalities: The word "terminal" is suggested to be changed to "system". Appropriate correction is required.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 7-14, 16-18, 21, and 28-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art in view of Ono et al. (U.S. Patent No. 5, 465, 402).

Regarding claims 7 and 21, the applicant discloses all the limitations of claim 7 and 21 in the admitted prior art (Fig. 6, pg. 3, lines 16-28 and pg. 4, lines 1-13) except a frequency synthesizer responsive to a tuning signal for providing a local oscillator signal; and

a controller responsive to a comparison signal for providing the tuning signal.

However, Ono et al. discloses a frequency synthesizer (Fig. 1, block 4) responsive to a tuning signal (column 4, lines 37-40, FREQ. DATA) for providing a local oscillator signal (column 4, lines 32-36); and

a controller (Fig. 1, block 12) responsive to a comparison signal (column 4, lines 46-50) for providing the tuning signal (column 4, lines 37-40, FREQ. DATA).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the prior art with the adjustable frequency synthesizer and

controller of Ono et al. in order to reduce phase/frequency error in the modems and increase the adaptability of the modems during phase/frequency synchronization.

Regarding claim 8, which inherits the limitations of claim 7, it would have been obvious to one of ordinary skill in the art that a PLL compares the phase of two signals and produces a comparison (error) signal based on the comparison. The comparison signal is then used by the PLL for phase synchronization with an incoming signal. Thus, a PLL comparing the phase of two signals and producing a comparison signal does not constitute patentability.

Regarding claim 9, which inherits the limitations of claim 7, it would have been obvious to one of ordinary skill in the art that a PLL can compare the frequency of two signals. The comparison signal is then used by the PLL for frequency synchronization with an incoming signal. Thus, a PLL comparing the frequency of two signals and producing a comparison signal does not constitute patentability.

Regarding claim 10, which inherits the limitations of claim 7, Ono et al. further discloses the tuning signal varies the frequency of the local oscillator signal in a plurality of discrete steps on either side of a nominal center frequency value (column 4, lines 37-46), wherein the number provided to the divide by counter determines the number of discrete steps, wherein the discrete steps are counted by the counter.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the prior art with the adjustable frequency synthesizer and controller of Ono et al. in order to reduce phase/frequency error in the modems and increase the adaptability of the modems during phase/frequency synchronization.

Regarding claim 11, which inherits the limitations of claim 10, admitted prior art discloses all the limitations of claim 10 (Fig. 2, block 114, pg. 3, lines 24-26) except locking over a range of signal frequencies which is on the same order of magnitude as a frequency range between ones of the discrete steps.

However, Ono et al. discloses locking over a range of signal frequencies corresponding a to plurality of discrete steps (column 4, lines 37-54), wherein the number provided to the divide by counter determines the number of discrete steps.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the prior art to lock over a range of signal frequencies which is on the same order of magnitude as a frequency range between ones of the discrete steps in order to reduce the chance of an "out of lock" or "out of phase" condition in the device which could cause reception or transmission error in the device.

Regarding claim 12, which inherits the limitations of claim 10, Ono et al. further discloses the discrete steps are equally spaced, having a frequency difference between steps within a range of 50 to 200 KHz (column 4, lines 37-46), wherein a number can be chosen for the counter to equally space the steps of the counter and vary the frequency with a range of 50 to 200 KHz. It would have been obvious to one of ordinary skill in the art to include this feature because equally spaced steps would simplify the process of locking by the device.

Regarding claim 13, which inherits the limitations of claim 7, Ono et al. further discloses an alarm (column 4, lines 46-50, PLL LOCK signal) corresponding to a predetermined value (out of phase condition) of the comparison signal. It would have been obvious to one of ordinary

skill in the art at the time the invention was made to include this feature to alert the device of an out of phase position which could cause reception or transmission error in the device

Regarding claim 14, which inherits the limitations of claim 13, Ono et al. further discloses the controller is responsive to the alarm for adjusting the tuning signal (column 4, lines 37-54), wherein the FREQ. DATA signal is adjusted during an out of phase condition. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include this feature in order to correct an out of phase condition in the device which improves the reception and transmission capabilities in the device.

Regarding claim 16, which inherits the limitations of claim 7, Ono et al. further discloses the controller provides a tuning signal (column 4, lines 37-54) to produce a desired effect on the comparison signal, wherein the desired effect is a lock-up condition. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include this feature in order to correct an out of phase condition in the device which improves the reception and transmission capabilities in the device.

Regarding claim 17, which inherits the limitations of claim 16, admitted prior art discloses all the limitations of claim 17 (Fig. 2, block 114, pg. 3, lines 24-26) except a controller which calculates a number of discrete steps required so as to produce a desired effect on the comparison signal.

However, Ono et al. discloses a controller which calculates a number of discrete steps required so as to produce a desired effect on the comparison signal (column 4, lines 37-54), wherein the number provided to the divide by counter determines the number of discrete steps

and is calculated according to the out of phase signal from the phase comparator to produce a "locked up" or in-phase condition.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the prior art with the controller of Ono et al. in order to reduce phase/frequency error in the modems and increase the adaptability of the modems during phase/frequency synchronization.

Regarding claim 18, which inherits the limitations of claim 17, Ono et al. discloses the controller supplies the tuning signal (FREQ. DATA) to correspond to the number of discrete steps calculated (column 4, lines 37-40). It would have been obvious to one of ordinary skill in the art to include this feature because discreted steps would simplify the process of locking by the device.

Regarding claim 28 the applicant discloses all the limitations of claim 28 in the admitted prior art (Fig. 6, pg. 3, lines 16-28 and pg. 4, lines 1-13) except synthesizing a local oscillator signal in response to a tuning signal; and

providing the tuning signal in response to the offset error signal.

However, Ono et al. discloses a frequency synthesizer (Fig. 1, block 4) responsive to a tuning signal (column 4, lines 37-40, FREQ. DATA) for providing a local oscillator signal (column 4, lines 32-36); and

a controller (Fig. 1, block 12) responsive to a offset error signal(column 4, lines 46-50) for providing the tuning signal (column 4, lines 37-40, FREQ. DATA).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the prior art with the adjustable frequency synthesizer and

controller of Ono et al. in order to reduce phase/frequency error in the modems and increase the adaptability of the modems during phase/frequency synchronization.

Regarding claims 29-31, which inherits the limitations of claim 28; further the claimed method including features that correspond with subject matter mentioned above in the rejection of claims 10, 13, and 14.

Allowable Subject Matter

9. Claims 15, 19, 20, and 32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. Claims 22-27 are allowable over prior art because related references do not disclose a controller responsive to a frequency shift command from a remote terminal receiving a radio frequency signal for providing a tuning signal to a frequency synthesizer. Claims 33-37 are allowable over prior art because related references do not disclose a first controller responsive to a frequency shift command signal for providing a first tuning signal to a first frequency synthesizer and a second controller responsive to an offset error signal for providing the second tuning signal to a second frequency synthesizer and the frequency shift command signal to the first controller.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Masaki (U.S. Patent No. 5, 574, 995) discloses a radio receiver which shifts the frequency of the local oscillator to obtain a desired channel frequency.

Cox et al. (U.S. Patent No. 5, 732, 333) discloses a linear transmitter with a control device which communicates signals to a frequency synthesizer.

12. Brown et al. (U.S. Patent No. 6, 366, 622) discloses a method and apparatus for wireless communications including a radio, modem, and controller (Figs. 22-24).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Curtis B. Odom whose telephone number is 703-305-4097. The examiner can normally be reached on Monday- Friday, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703-305-4714. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Curtis Odom
May 21, 2003

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